

## REMARKS

Reconsideration of this application is respectfully requested. The present amendment is submitted in response to the Office Action dated November 16, 2005. Claims 1-21 are currently pending in the application. Claims 1-3, 5-7, 9-12, 14-18, 20 and 21 have been amended. No new matter or issues are believed to have been introduced by this amendment. In view of the above amendments and the following remarks, reconsideration and allowance of this application are respectfully requested.

The defective declaration is hereby being replaced with a new declaration correcting the defect, namely listing an incorrect serial number of the present application.

The examiner has objected to the specification for missing a portion of text on the last line of page 1. The applicant would like to point out that the missing portion of text is due to a formatting error and the interrupted sentence continues on page 2 in the originally filed specification.

Claims 1-3, 8 and 21 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,663,623 to Oyama et al. (hereinafter “Oyama”). Oyama is directed to an electrosurgical apparatus for providing electrosurgical energy to tissue in a consistent manner “even if electrodes having different volumes or different surface areas are used for an operation tool.” (Oyama, col. 3, lines 14-16). Oyama discusses crest factors very briefly and only in conjunction with Figs. 20A-C which illustrate waveforms 1-3 respectively. The waveforms 1-3 control the output voltage and each waveform has different output properties.

Waveform 1 has a substantially pulse-wave-like shape and has a high crest factor, so a high coagulation function is obtained.

Waveform 2 has a lower crest factor than the waveform 1 but has a

broadened pulse width although the peak value is low. Waveform 3 has a low peak value but has a much broader pulse width, so the waveform has a sine-wave-like shape. *Id.*, col. 12, line 63 – col. 13, line 4.

Crest factor is a ratio of the peak voltage to the root mean square of the voltage and each waveform which has different properties (e.g., pulse width, peak voltage, etc.) necessarily has a different crest factor. The waveforms 1-3 disclosed in Oyama certainly have different crest factors simply because they are different waveforms as shown in Figs. 20A-C. As stated above, they have different peak voltages, duty cycles (e.g., pulse widths), etc. Therefore, when Oyama switches between the waveforms 1-3 this maintains predetermined output voltage but changes the crest factor since a different waveform is being used. (*Id.*, col. 13, lines 15-19).

In contrast, as recited in independent claim 1, an electrosurgical generator disclosed in the present application comprises “a waveform generator for receiving the at least one waveform adjustment signal for adjusting the output crest factor and output power of the at least one waveform based on the determined tissue impedance.” The waveform generator as recited in independent claim 1 adjusts the crest factor of the same waveform without switching from one waveform to another. Oyama does not adjust the crest factor of each of the waveform 1-3, Oyama merely switches from waveform 1 “to the waveform 2 and then to the waveform 3 to lower the peak value of the waveform so that the crest factor is lowered.” (*Id.*). This type of output control is equivalent to switching between different output modes of the electrosurgical generator (e.g., cut, coagulate, etc.) which is significantly less precise than adjusting the crest factor of the same output waveform. Accordingly, the rejection under 35 U.S.C. 102(e) of independent claim 1 and claims 2, 3, and 8 which depend therefrom should be withdrawn because the claims are clearly not anticipated by Oyama.

For at least the reasons discussed above with regard to independent claim 1, it is respectfully submitted that the independent claim 21 is also not anticipated by Oyama.

Accordingly, the rejection under 35 U.S.C. 102(e) of claim 21 should also be withdrawn.

Claims 10-13, 18, 19 and 20 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,961,047 to Carder. (hereinafter “Carder”). Although Carder determines tissue impedance and adjusts output power based on the measured impedance, Carder does not disclose “adjusting the output crest factor and output power of the at least one waveform generated by said electrosurgical generator based on the determined tissue impedance” as recited in independent claim 10. Carder does not even mention the term “crest factor” anywhere in its specification or in the portion of the specification cited by the examiner (e.g., Carder, col. 3, line 42 – col. 4 line 9). In that portion Carder discusses different switches to set a desired power level and to select a desired mode of operation (e.g., cut, coagulate, etc.) and/or desired power curve. (Carder, col. 3, lines 45-54). Carder also discusses converting voltage and current inputs into an impedance signal which is then used in conjunction with a signal from the mode/power curve switch to address a look-up table. (*Id.*, col. 3, lines 62-65). The look-up table provides voltage values “required to produce the desired power output at the present impedance for the particular power curve.” (*Id.*, col. 4, lines 1-4). The described power control scheme does not disclose adjustment of the crest factor of the at least one waveform based on impedance measurements and is only directed to adjusting the output power. Accordingly, the rejection under 35 U.S.C. 102(e) of independent claim 10 and claims 11-13, 18, and 19 which depend therefrom should be withdrawn since Carder in no way anticipates, teaches or even remotely suggests applicant’s claimed invention.

For at least the reasons discussed above with regard to independent claim 10, it is

respectfully submitted that the independent claim 20 is also not anticipated by Carder.

Accordingly, the rejection under 35 U.S.C. 102(b) of claim 20 should also be withdrawn.

Claims 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Oyama in view of Carder. It is respectfully submitted that, for at least the reasons discussed above, neither Oyama or Carder teach or suggest, either alone or in combination, “a waveform generator for receiving the at least one waveform adjustment signal for adjusting the output crest factor and output power of the at least one waveform based on the determined tissue impedance” as recited in independent claim 1. Moreover, there is no suggestion or motivation to combine these references to teach applicant’s invention. Accordingly, the rejection under 35 U.S.C. 103(a) of claim 4 should be withdrawn since it depends on claim 1.

Claims 5-7 and 9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Oyama in view of U.S. Patent No. 4,191,188 to Belt et al. (hereinafter “Belt”). Belt utilizes

[An] apparatus for simultaneously and proportionally adjusting the first and second timing intervals to spread and narrow the second time interval about the peak of the wave. This technique provides for variation of the crest factor. Advantageously, and quite expediently, a duty cycle control including a potentiometer connected in circuit with the RC timing elements of each timer provides a continuous adjustment of crest factor over a range which may extend from 0%-100% duty cycle.

Belt, col. 2, lines 47-57.

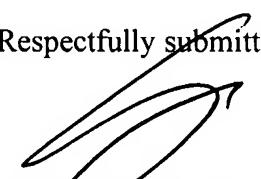
However, the generator disclosed in Belt lacks any sort of circuitry and/or sensors for measuring tissue impedance and adjusting the crest factor based on that corresponding impedance adjustment signal. Belt merely discloses a method for adjusting the crest factor but not based on measured impedance. As discussed above, Oyama fails to disclose adjustment of the crest factor of the at least one waveform based on measured impedance and Carder fails to

even mention the term “crest factor.” Therefore, it is respectfully submitted for at least the reasons discussed above that neither Oyama or Belt teach or suggest, either alone or in combination, “a waveform generator for receiving the at least one waveform adjustment signal for adjusting the output crest factor and output power of the at least one waveform based on the determined tissue impedance” as recited in independent claim 1. Accordingly, the rejection under 35 U.S.C. 103(a) of claims 5-7 and 9 should be withdrawn since they depends on claim 1.

Claims 10-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Carder in view of Belt. For at least the reasons discussed above with regard to Belt and Carder, it is respectfully submitted that the independent claim 10 is distinguishable over Carder in view of Belt. Accordingly, the rejection under 35 U.S.C. 103(a) of claim 10 and claims 11-19 which depend therefrom should be withdrawn.

In view of the foregoing, it is therefore respectfully submitted that all of the claims in the present application, namely, claims 1-21 are allowable. If the Examiner should have any questions or comments or would like to discuss the merits of the present application with Applicants' attorney of record or set up an interview at a convenient time for the Examiner, the Examiner is respectfully invited to contact Applicants' attorney of record at the phone number listed below at his earliest convenience.

Respectfully submitted,



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